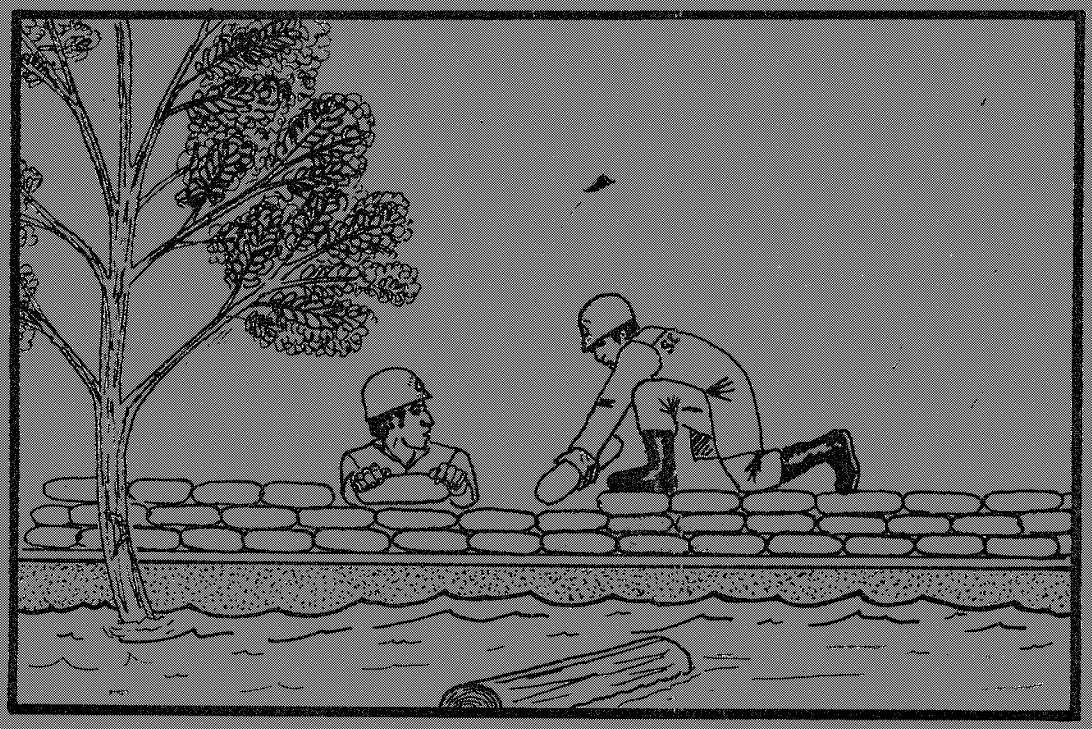
FLOOD EMERGENCY REPORT

JAN. 13 THROUGH JAN. 17, 1978



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SANTA CLARA VALLEY WATER DISTRICT

FLOOD EMERGENCY OPERATIONS

JANUARY 13, 1978 THROUGH JANUARY 17, 1978

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February 1978

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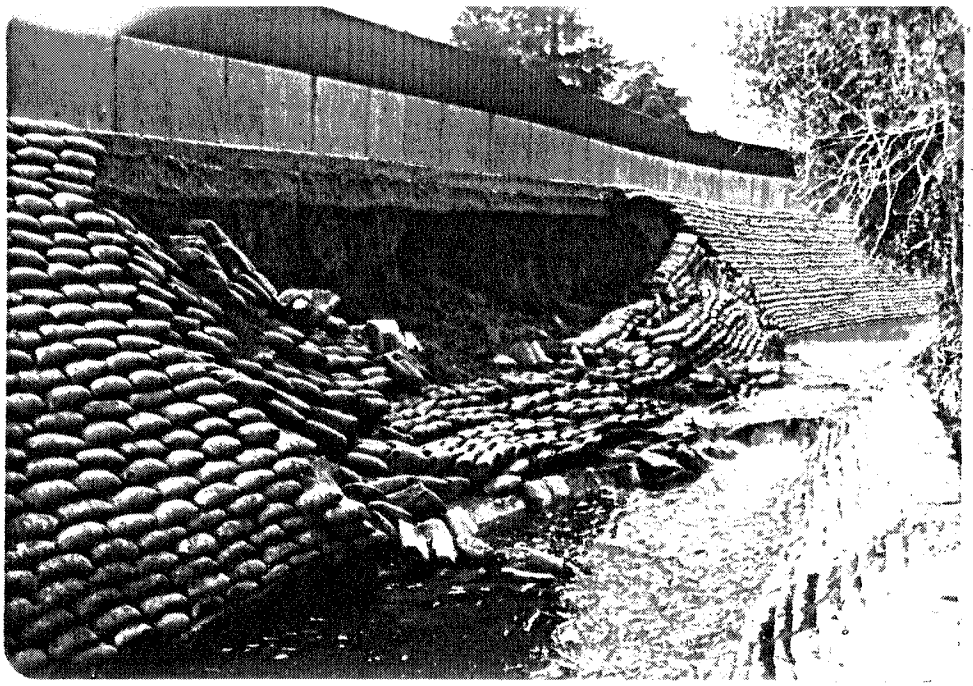
PURPOSE

During the period of January 13, 1978 through January 17, 1978, Santa Clara Valley experienced heavy rainfall and runoff. None of the County's major reservoirs spilled during the period. However, significant runoff below local dams and runoff from watersheds without dams caused heavy damage. Present estimates to repair damages to District facilities is about $450,000. In some cases this repair work has already been completed. In addition, private property in many areas both off and on streams was damaged.

This report serves to document the hydrologic information, flooding and erosion damage for possible reimbursement through State and Federal sources. Further, the report will serve as a historic document for planning purposes.

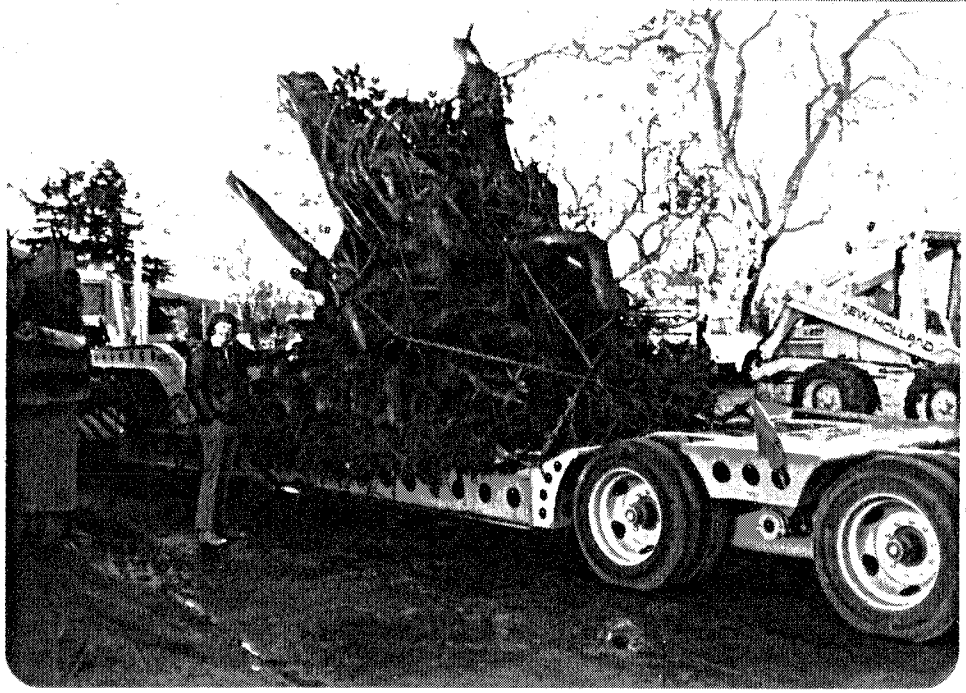
The photographs which follow are representative of the damage and activities which occurred during the storm period.



A riprap structure was undermined and failed during the storm. This is San Tomas Aquino Creek along Silacci Drive just upstream of McCoy Avenue.

Debris and vegetation removal occupied a large part of the time of maintenance crews.

Shown here is Guadalupe River at Branham Lane bridge. The crane on the bank was rented to remove the debris.

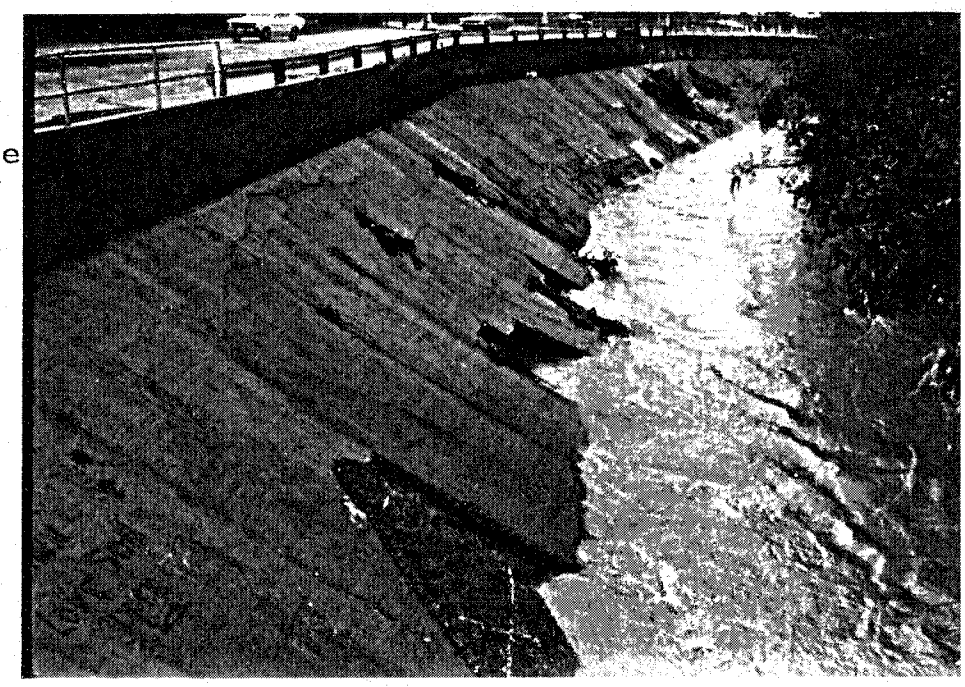


Trees in the bottom of many creeks caused major blockages to flow and required removal. Shown here is the trunk of a tree removed from San Francisquito Creek downstream of Chaucer Avenue.

Many District creeks had debris and tree blockage problems similar to the one shown in this photo.

This is Permanente Creek upstream of Foothill Expressway.

This old structure is showing its age. This is Guadalupe River upstream of Malone Drive The lining is beginning to fail and erosion is occurring behind the wall.



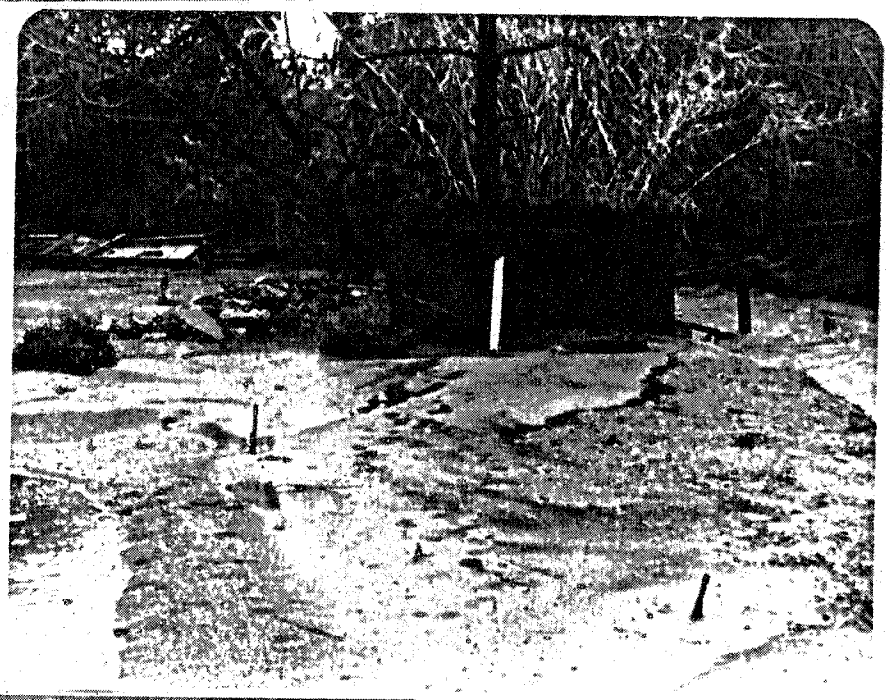
Erosion damage similar to that shown in this photo constituted a good part of the damage imparted by these storms.

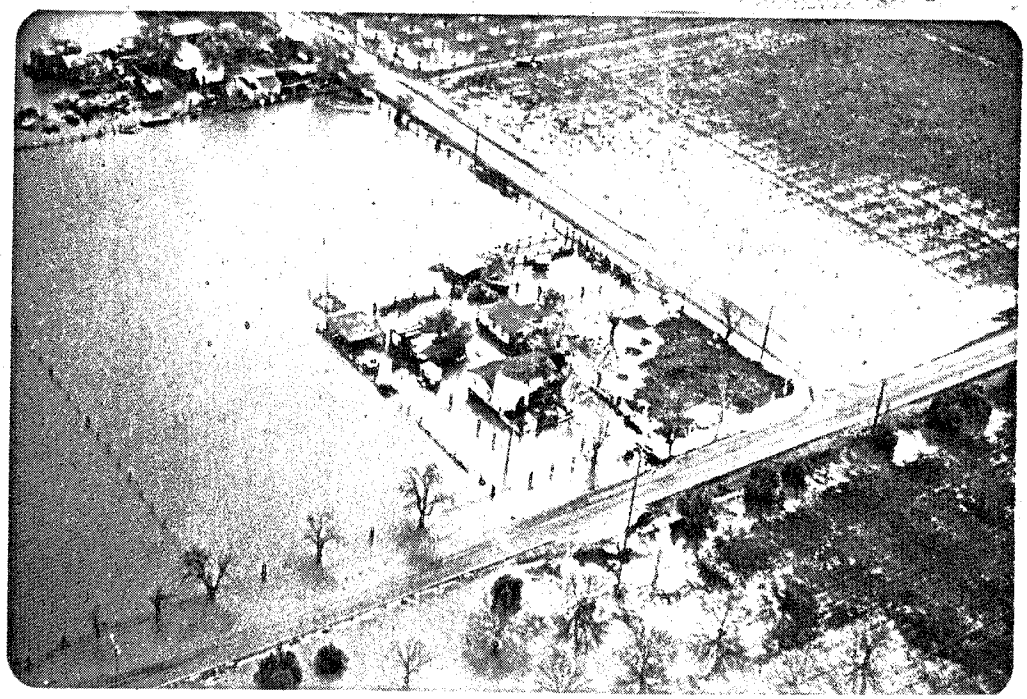
Shown here is Berryessa Creek looking upstream from Yosemite Avenue.

Damage was extensive on the levees along Calabazas Creek between Tasman Drive and Old Mountain View-Alviso Road.

Shown here is typical bank erosion which occurred in the east bank levee.

Ross Creek overtopped its banks downstream of Blossom Hill Road and Cherrystone Drive. As shown in this photo the back yard of 16130 Lilac Drive was inundated and fences were destroyed.





Local drainage was a problem in several areas throughout the county. Shown here is the intersection of Hill Road and Main Avenue in Morgan Hill.

Jan. 16, 1978

District personnel worked diligently to help in the flood protection efforts. At the main facility, a group of office technicians and engineers are shown here filling sandbags for placement at flood endangered sites throughout the county.

High flow staking allows the flow in a channel to be determined after the water level has fallen and rain has stopped.

Shown here is a storm patrol team member staking Saratoga Creek at its confluence with San Tomas Aquino Creek on January 16, 1978.

Gathering data on creek flows is one of the prime goals of the data collection group during a storm.

Shown here is a stream gager just upstream of the drop structure on Guadalupe River at the District's main facility.

SUMMARY

Rainfall

During the period of January 13, 1978 through January 17, 1978, a series of four storms entered Santa Clara County causing significant rainfall to occur. Table 1 summarizes the daily rainfall experienced throughout the County during this storm period as measured by District measurement stations. Rainfall varied from 3.0 inches to 13.5 inches as recorded at these key locations.

Runoff

The relatively heavy rainfall which occurred saturated the soils which had been parched from the previous two years of drought, and then major runoff occurred. As local reservoir storage prior to the storm was at about 17% of capacity, a large volume of runoff was captured in the reservoirs and prevented from combining with the large downstream urban runoffs. Had local reservoirs been full or nearly full at the start of this storm period, larger flows and resultant flooding could have been experienced. Table 2 on page 4 of this report summarizes the peak flows as recorded at select District and USGS streamflow measurement stations located throughout the County. Table 2 also relates a few of the peak flow events to a return frequency. The return frequencies vary from a low of about two years to a high of about seventy years. Table 4 on page 14 summarizes reservoir storage prior to and after the storm.

Flood Damage

The estimated cost to repair damages which resulted from storms to District facilities is about $450,000. Most of the damage

TABLE 1

RAINFALL DATA
(Inches)
STORM OF JANUARY 13-17, 1978
(All Values are Midnight to Midnight)

STATIONS NAME	NO.	LOCATION (Basin)	1/13	1/14	1/15	1/16	1/17	TOTAL
Almaden	4	Alamitos Creek	1.5	2.4	.6	3.2	.1	7.8
Anderson	41	Coyote Creek	1.0	1.4	.5	2.1	.2	5.2
Dahl Ranch	24	Adobe Creek	2.2	2.6	.9	2.5	.5	8.7
Lexington Reservoir	42	Los Gatos Creek	2.7	4.4	1.5	4.8	.1	13.5
Peabody	75	Llagas Creek	.8	.8	.2	1.1	.1	3.0
Penitencia Water Treatment Plant	99	U. Penitencia Cr.	.6	1.4	.7	1.5	.2	4.4
San Jose	86	Guadalupe River	.44	1.42	.27	1.14	.16	3.43
Stevens Creek	100	Stevens Creek	1.3	3.3	.8	3.8	.3	9.5
U. T. C.	102	Silver Creek	.9	1.5	.4	1.7	.2	4.7
Uvas Reservoir	104	Uvas Creek	1.4	1.9	.9	3.0	0	7.2
Valley Christian	77	Saratoga Creek	2.8	4.3	1.2	4.6	.3	13.2

TABLE 2

PRELIMINARY PEAK FLOW VALUES FOR VARIOUS STREAMS IN SANTA CLARA COUNTY DURING THE PERIOD JANUARY 14-17, 1978

Station Number	Location	Flow[1] cfs	Return[3] Period (Yrs)	1%[2] Design Event cfs
24	San Tomas @ Williams	2,600	10	4,600
25	Saratoga Cr. @ Pruneridge	2,500	10	3,500
26A	Calabazas @ Wilcox High	2,500	10	3,900
32A	Permanente @ Berry Drive	395	1.7	2,700
21	Ross @ Blossom Hill	1,060	67	1,200
51	Ross @ Cherry	1,500	20	2,000
31	Calabazas @ Rainbow	1,000	7	2,200
10	Fisher @ Highway 101	500	2.5	3,700
USGS	San Francisquito @ Stanford	2,470	4	8,500
USGS	Saratoga above Saratoga	1,500	5	3,400
29	San Tomas @ SPRR	1,400	8.3	3,200
30	Wildcat Creek @ SPRR	1,110	29	1,600
27	Smith Creek @ Elam Avenue	460	11	1,000
59	Los Gatos @ Lark Avenue	2,680	25	6,900
1	Penitencia @ Piedmont	780		
64	Berryessa @ Calaveras	540		
23B	Guadalupe River @ Lincoln	3,890		
65	Little Arthur Creek	950	2.5	3,350
33	Hale Creek @ Magdalena	210		
USGS	Guadalupe River in San Jose	6,500		
USGS	Coyote Creek near Gilroy	6,500		
USGS	Upper Penitencia in San Jose	840		

TABLE 2 (continued)

Station Number	Location	Flow 1/ cfs	Return 3/ Period (Yrs)	1% 2/ Design Event cfs
USGS	Arroyo Hondo Creek near S.J.	2,950		
USGS	Pajaro River near Gilroy	5,300		
USGS	Llagas Creek above Cherry	1,060		
USGS	Uvas Creek above Uvas Res.	3,600		
USGS	Pacheco Creek near Dunnevalle	2,570		
USGS	Bodfish Creek near Gilroy	355	1.8	2,500
USGS	Cedar Creek near Bell Station	555		
USGS	Uvas Creek near Gilroy	2,510		
USGS	Calabazas Creek @ Mt. Eden	102		
USGS	Prospect Creek @ Golf Course	63		
USGS	Matadero Creek @ Palo Alto	840	5.8	2,400

1/ Flow rate values and their respective frequencies are estimated. They are reported herein as a part of flood emergency measures. These values should not be used for any flood analysis. Final values will be published after recorded data is evaluated.

2/ Design values are based on ultimate watershed conditions, which includes urbanization of urban service areas, and no overbanking conditions.

3/ These values are approximate. They are based on frequency regimes for ultimate conditions.

resulted from high flows which caused serious erosion in the creeks. Also, many trees were uprooted and, subsequently, caused obstruction to the flow of water. The following is a list of these facilities and estimated costs to repair. In some cases this repair work has already been completed.

Northwest Zone

San Francisquito Creek	$ 10,000
Matadero Creek	5,000
Adobe Creek	20,000
Hale Creek	3,000
Permanente Creek	10,000
Stevens Creek	10,000
Total	$ 58,000

North Central Zone

Sunnyvale East	$ 15,000
Sunnyvale West	3,000
Junipero Serra	2,000
Misletoe Creek	2,000
Calabazas Creek	90,000
Saratoga Creek	30,000
San Tomas Creek	35,000
Wildcat Creek	10,000
Rodeo Creek	5,000
Regnart Creek	7,500
El Camino Storm Drain	5,000
Total	$204,500

Central Zone

Ross Creek	$ 25,000
Guadalupe Creek	5,000
Guadalupe River	15,000
Los Gatos Creek	5,000
Canoas Creek	5,000
Almendra Creek	2,500
Total	$ 57,500

East Zone

Berryessa Creek	$ 5,000
Los Coches Creek	2,000
Lower Penitencia Creek	3,000
North Babb Creek	1,000
Upper Penitencia Creek	3,000
Silver Creek	1,000
Thompson Creek	5,000
Total	$ 20,000

South Zone	
Miscellaneous	$ 10,000
Raw Water Transmission and Distribution	
Coyote-Alamitos Canal	$ 20,000
Almaden-Calero Canal	10,000
Coyote, Coyote Canal Extension and Evergreen Canal	25,000
Total	$ 55,000
Source of Supply	
Miscellaneous	$ 5,000
Subtotal	$410,000
10% for miscellaneous undiscovered problems	40,000
Total	$450,000

Description of Activities

A condition of "Emergency" was declared at 9:00 a.m. Saturday, January 14, 1978. Prior to that time, District personnel had manned the District's Weather Center continuously from 9:00 p.m. January 13, 1978, tracking storm activity in the Pacific and reviewing National Weather Service Maps and Predictions. Also, District personnel were interrogating remote precipitation, streamflow, and reservoir measurement stations during the 12 hours preceding the declaration of an "Emergency".

The emergency center remained open from 9:00 a.m. January 14, 1978 until Tuesday, January 17, 1978 at 3:00 p.m. when the emergency condition was terminated. During the period when the emergency condition existed, flood information teams, maintenance crews, streamflow measurement teams, sandbag crews, and the emergency center team were performing assigned duties. Several hundred calls were received from the public requesting information, assistance and reporting of problems.

Preliminary labor charges indicate about 2,575 hours of District personnel were expended toward the various activities associated with this "Emergency Operation". Labor cost for the period was $28,470. A total of 87 employees participated in the event. A breakdown of these expenditures is included in Appendix C-1. Material and supply charges are not known at this time.

HYDROLOGIC DATA

Rainfall

The storm period began at about 1200 p.m. on January 13, 1978 and ended at about 6:00 a.m. on January 17, 1978. A series of four storms passed through this area during this period. The periods and magnitudes of the individual storms can be seen by examining the Accumulated Rainfall graphs for specific rainfall measurement stations (Appendix A-1 through A-5).

Table 3 is a summary of the rainfall frequency data at the representative stations for the 24-hour period and the 3-day period.

Runoff

The runoff yield from a storm is, in some respects, more crucial than the amount of rainfall. This runoff dictates the flooding potential of a storm and the amount of water which contributes to surface storage.

Table 3 on page 10 lists the peak flows experienced at various District and USGS streamflow measurement stations within Santa Clara County. Peak flow values and their respective return periods are preliminary. They are reported herein as a part of the flood information. These values should not be used for any flood analysis. Final values will be published after recorded data is evaluated.

Plots of some of the select hydrographs are included in Appendix B-3 through B-6. (Hydrographs are plots of flow versus time.)

TABLE 3

RAINFALL INTENSITIES
AND RETURN PERIODS[1/]

Precipitation Station Name	No.	24-Hr. Maximum (Inches)	Approx. Return Period (Yrs)	3-Day Maximum (Inches)	Approx. Return Period (Yrs)
Almaden	4	3.2	2	6.8	3
Anderson	41	2.1	2	4.0	3
Dahl Ranch	24	4.0	4	7.5	NA
Lexington	42	5.3	2.5	12.4	15
Penitencia Water Treatment Plant	99	1.6	2	3.8	NA
Stevens Creek	100	3.9	2	8.0	7
United Tech	102	2.1	12	3.7	NA

NA = not available

1/ All values are approximate. Final values will be available from the Basic Data Section after recorded data are evaluated.

These graphs give a visual presentation of the peak flows and the time period of their occurrence. Additional hydrographs and hydrologic data are available upon request from the Basic Data Section.

Other tables can be found in Appendix B-1 and B-2 listing the observed staff readings, high water marks, and streamflow measurements for various streams within the County during the storm.

Weather

The storm period from January 12, 1978 through January 17, 1978 was a continuation of the warm southerly storm pattern which started on December 16, 1977.

From 2:35 p.m. on January 12, 1978 until 1:00 a.m. on January 14, 1978, the cloud seeding program was active with seven generators in use. At 1:00 a.m. on January 14, 1978, all seeding was suspended due to heavy rainfall and rising streamflow. No seeding was conducted during the remainder of the storm.

A series of four storms entered the area during the period. The starting time for the individual storms was January 12, 1978 at 2:00 p.m.; January 13, 1978 at 1:00 p.m.; January 15, 1978 at 6:00 a.m.; and January 16, 1978 at 6:00 a.m. The low pressure center remained off the coast throughout the period, maintaining periods of heavy shower activity between the systems.

Reservoir Operation

Reservoir operations during the storm were conducted in order that the maximum storm runoff could be stored for future use. On January 13, 1978 at 8:00 a.m. there was about 148,000 acre-feet of storage capacity availabe in the reservoirs.

Water was diverted from Almaden to Calero Reservoir for storage in Calero. An effort was made to divert runoff below the dam to the recharge facilities so that a minimum of water would be lost to the Bay. The schedule of operation of the reservoirs is as follows:

Almaden

Closed prior to	1/16/78 @ 2:00 p.m.	
Opened	1/16/78 @ 2:00 p.m.	to 150 cfs
Closed	1/20/78 @ 9:30 a.m.	

Guadalupe

Closed prior to	1/21/78 @ 9:00 a.m.	
Opened	1/21/78 @ 9:00 a.m.	to 50 cfs
Reduced	1/22/78 @ 9:00 a.m.	to 14 cfs
Reduced	1/23/78 @ 9:00 a.m.	to 8 cfs

Lexington

Closed prior to	1/22/78 @ 11:30 a.m.	
Opened	1/22/78 @ 11:30 a.m.	to 30 cfs
Closed	1/25/78 @ 4:00 p.m.	

Stevens Creek

Closed prior to	1/17/78 @ 11:00 a.m.	
Opened	1/17/78 @ 11:00 a.m.	to 250 cfs
Reduced	1/20/78 @ 11:00 a.m.	to 35 cfs
Reduced	1/25/78 @ 10:30 a.m.	to 5 cfs

Coyote

Closed prior to	1/17/78 @ 3:00 p.m.	
Opened	1/17/78 @ 3:00 p.m.	to 300 cfs
Closed	1/26/78 @ 3:00 p.m.	

Vasona

Closed prior to	1/13/78 @ 10:00 a.m.	
Opened	1/13/78 @ 10:00 a.m. to	60 cfs
Closed	1/24/78 @ 10:00 a.m.	

Anderson & Calero

No significant reservoir releases were made from these reservoirs during the storm period.

During the period from January 13, 1978 to January 24, 1978 the following quantities were estimated to be diverted to the recharge ponds:

Kirk	-	550 acre-feet
Page	-	550 acre-feet
Guadalupe	-	360 acre-feet
Penitencia	-	200 acre-feet

The amount of water stored in District reservoirs went from 16% of capacity before the storm period to 37% of capacity at the end of the storm period. Water continued to flow into the reservoirs following the storm. The Reservoir Storage Table shows the reservoir storage at the beginning and ending of the storm.

TABLE 4

RESERVOIR STORAGE

Before and After Storm
Period of January 13 through January 17, 1978

Reservoir	Maximum Storage at Spillway (Ac-ft)	Beginning 08:00, 1/13/78		Ending 07:40, 1/18/7	
		Storage (Ac-ft)	Percent Capacity	Storage (Ac-ft)	Percent Capacit
Almaden	1,780	190	11	1,777	100
Anderson	91,280	13,090	14	17,348	19
Calero	10,160	1,724	17	4,015	40
Chesbro*	8,086	1,114	14	5,725	71
Coyote	23,700	3,070	13	15,370	65
Guadalupe	3,740	1,205	32	3,124	84
Lexington	20,210	3,588	18	11,506	57
Stevens Ck	3,600	1,300	36	3,524	98
Uvas*	10,000	3,679	37	10,000	100
Vasona	410	263	64	406	99
Pacheco*	6,135	1,912	31	6,135	100
TOTALS	179,101	31,135	17	78,929	44
District Reservoir Totals	154,880	24,430	16	57,069	37

*Reservoir not owned and operated by Santa Clara Valley Water District.

FLOOD DAMAGE

Damage to District Facilities

The damage resulting from the storms was significant. The estimated cost to repair these damages is about $450,000. Problem areas requiring repair are still being discovered and may cause the ultimate repair costs to exceed this figure. A detailed description of problems and resultant action taken during the flood emergency is set forth below.

Northwest Zone

Adobe Creek - Trees were removed from the creek. There has been some report of minor erosion damage upstream of El Camino Real. Maintenance personnel have not had the opportunity to visit this area since the storm. However, during heavy rainfall in the past, this area has always had serious erosion problems. Therefore, it is anticipated that this will again be the case. Estimated cost for this erosion repair and the tree removal is $20,000.

Hale Creek - Several trees needed to be removed from this channel to prevent flooding. Estimated repair cost is $3,000.

Matadero Creek - Upstream of Matadero Avenue and downstream of Laguna Avenue existing erosion scallops were made worse during the recent storm. The estimated cost to repair this is $5,000.

Permanente Creek - Silt removal and tree work is required in this channel. Estimated repair cost is $10,000.

San Francisquito Creek - Downstream of Chaucer Avenue in Palo Alto a major tree blockage was removed from this creek in the afternoon of January 17, 1978. The cost of this work was about $10,000.

North Central Zone

Calabazas Creek - This was a major problem area during the storm. The creek overtopped its banks at Miller Avenue and Stevens Creek Boulevard. Extensive erosion occurred between 280 Freeway and Lawrence Expressway, downstream of Pruneridge Avenue, and in the Pierce Road area. Some potentially hazardous trees were removed along this creek.

A great deal of maintenance activity took place between Tasman Drive and Old Mountain View - Alviso Road. Work began at 11:00 p.m. on January 14, 1978 on the easterly side of the creek. District forces attempted to stop flows across the road into Edelweiss Dairy. They began placing sandbags at three of the gate entrances to the dairy at 12:30 a.m. on January 15, 1978. At 8:00 a.m. on January 15, 1978 sandbagging was started on the levee low spots on the westerly side of the creek. At 4:00 p.m. January 15, 1978, sandbagging repairs on the breach near Tasman Drive along the easterly side of the creek began. There were at least nine more breaches and overtopping sections on the easterly levee that required work. In addition to District forces the equipment rental contractor provided labor for this work. Sandbagging continued until 3:30 p.m. on January 17, 1978, at which time flows subsided and the need for sandbags disappeared.

The estimated cost to repair the damages and replace the levee on Calabazas Creek is $90,000.

El Camino Storm Drain - A car body along with other debris had to be removed from this channel to prevent overtopping. The estimated cost for this work was $5,000.

Junipero Sierra - High flows caused erosion at Mary Avenue. Estimated repair cost is $2,000.

Mistletoe Creek - Repair cost of flood worsened erosion 250 feet upstream of Mistletoe Avenue is estimated at $2,000.

Regnart Creek - Erosion along Rodriguez Avenue in Cupertino must be repaired. Also during the storm the trash rack at Tuscany Lane was seriously blocked. Maintenance crews were summoned to clean it out. Estimated cost for the trash rack cleaning and erosion repair is $7,500.

Rodeo Creek - Erosion along the westerly bank downstream of Prospect Road must be repaired. Estimated repair cost is $5,000.

San Tomas Aquino Creek - Extensive concrete riprap failure accompanied by potential floodwall failure occurred upstream of McCoy Avenue. A thirty-foot length of sanitary trunk sewer line was exposed upstream of Avon Lane. Sandbag and concrete repairs were made at various locations on January 18, 1978. Also, several trees were removed from the creek. Estimated cost of this work is $35,000.

Saratoga Creek - Several trees were removed along this creek. Also extensive erosion occurred upstream of Prospect Road, downstream of Kiely Avenue and near Warden Lane. The estimated cost to repair these damages is $30,000.

Sunnyvale East - Serious erosion damage occurred along this channel upstream of Route 101. Estimated cost to repair is $15,000.

Sunnyvale West - Extensive erosion damage upstream of Highway 101 occurred. Estimated cost to repair is $3,000.

Wildcat Creek - Several trees were removed from this creek. Also, major concrete riprap failure occurred adjacent to Harleigh Avenue and must be repaired. Estimated cost to repair these damages is $10,000.

Central Zone

Almendra Creek - Trash racks in this area required several cleanings during the storm. Also, minor flooding of adjacent property immediately downstream of Tate Avenue occurred during the storm. Estimated cost to repair these damages is $2,500.

Calero Creek - Flooding occurred upstream of Fortini Road. From current reports this flooding caused no permanent damage, therefore, estimate of damage cost is zero.

Canoas Creek - Severe erosion damage occurred upstream of Capitol Expressway. Estimated cost to repair this is $5,000.

Guadalupe Creek/River - There was a substantial tule and bamboo blockage at the Branham Lane Bridge which was removed. Also, other debris and vegetation removal was required along the creek. A retaining wall along Creek Drive has failed and will need to be replaced. The concrete work at Malone Road failed and will also need to be repaired. The estimated cost for this work is $20,000.

Los Gatos Creek - The catch basin near Camden Avenue was damaged and needs to be repaired. Also, several trees needed to be removed during the storm period. Estimated cost to repair is $5,000.

Ross Creek - Immediately downstream of Topping Way, the U-frame channel was overtopped. Flood fighting efforts concentrated on preventing damage to the adjacent property during the storm. To prevent major flooding of adjacent properties, maintenance crews placed sandbags along the creek upstream of Blossom Hill Road on January 19, 1978. Estimated cost to repair was $25,000.

East Zone

Berryessa Creek - Downstream of Old Piedmont Road extensive erosion damage was incurred. Estimated cost to repair is $5,000.

Flint Creek - There was sheet flooding from Mt. Pleasant Road downstream through the Pleasant Hills Golf Course and the surrounding properties. There was no permanent damage reported; therefore, there is no estimated repair cost.

Los Coches Creek - A private roadfill/dam was pumped out to prevent failure by overtopping because high density tract housing immediately downstream of the dam would have been inundated without this action. Estimated cost to repair is $2,000.

Lower Penitencia Creek - Debris had to be removed from the creek at various locations. Also, some erosion damage occurred along Abel near the jail farm. Estimated cost to repair is $3,000.

North Babb Creek - Due to severe erosion, a fence fell into the creek and had to be removed. Estimated repair cost is $1,000.

Silver Creek - Debris had to be removed from several locations along this creek. Estimated cost is $1,000.

South Babb Creek - At 2160 Clayton Road the creek overtopped its banks because of a major debris blockage. As a result, some minor flooding occurred to adjacent properties. There is no permanent damage, therefore, estimated cost to repair is zero.

Thompson Creek - Some erosion damage occurred along the creek near Evergreen College. This has been repaired by District forces. Estimated cost was $5,000.

Upper Penitencia Creek - Some debris blockage occurred in the creek. Cost to remove this is estimated to be $3,000.

South Zone

Minor sheet flooding was reported at various locations throughout this zone. Fisher Creek, Lyons Creek and Llagas Creek were among the creeks which overtopped their banks and flooded adjacent properties during the storm period. Specific damage complaints are unknown at this time, but the cost associated with expected repairs has been estimated at $10,000.

Raw Water Transmission & Distribution

Almaden-Calero Canal - The trash rack immediately downstream of emergency spillway #4 was blocked and caused a failure of the emergency spillway. Minor erosion siltation of adjacent pastureland resulted. To repair the spillway and clean up the area, cost is estimated at $10,000.

Coyote-Alamitos Canal - Slides were reactivated along the canal near 910 Foothill Drive. Estimated cost to repair is $20,000.

Coyote Canal Extension/Metcalf Creek - Major siltation occurred at this location. It required removal which is estimated to have cost $25,000.

Source of Supply - Miscellaneous damage occurred which is expected to cost $5,000.

Summary

Reports of flood damage are still being received. It is likely that further damage discoveries will be of a minor nature. For preliminary purposes, unknown costs have been estimated to be about ten percent of detailed costs or about $40,000. It should be borne in mind that the cost details are preliminary since accurate accounting and payroll charge data are unavailable at this time.

Several hundred photographs were taken of District facilities and flooding areas during the storm. They are available for viewing upon request in the Basic Data Section.

Description of Flooding Problems

There were numerous areas where flooding, due to inadequate facilities or obstructed District facilities, occurred. The flood center received a number of calls reporting flooding in specific areas. All of these reports were investigated. Those which were verified are listed below. There are probably other areas that were flooded, however, the flooding has not been verified by District personnel. A brief description of the problem areas follows. For a more detailed description, a separate report has been prepared which contains the flood teams' reports.

Northwest Zone

There was no verified flooding reported in this zone.

North Central Zone

Calabazas Creek at Quarry Road - A creek bank caved in and caused a local drainage culvert to be clogged. This caused minor flooding and mud sliding on Mr. Schaufler's property on Quarry Road.

Calabazas Creek Between Tasman Drive and Old Mountain View-Alviso Road - Major levee breaching occurred in this area.

Central Zone

Ross Creek on South Kennedy Road - Minor flooding problems resulting from obstructed culverts and an inadequate upstream tributary at South Kennedy Road and near Brookacres Drive occurred.

Ross Creek Downstream of Blossom Hill Road - On January 14, some four homes on Cherrystone, Winterbrook and Lilac Avenues were threatened with flooding. This flooding was predicted before the homes were built. The Town of Los Gatos chose to retain ownership of the creek right of way in this area. A tree in the center of the creek is the cause of some of the problem. Homeowners do not want this removed.

Santa Teresa Creek and Calero Creek - Obstructed culverts caused backwater and overtopping of these creeks to surrounding properties.

South Babb Creek at Clayton Road - The Allen property at 12605 Clayton Road was inundated with water on Saturday, January 14. Silt and debris was deposited on the property.

Fisher Creek at Laguna Avenue - About 25 acres in the surrounding area flooded.

Little Llagas Creek at Llagas Avenue - Minor flooding was observed on properties adjacent to Little Llagas at this location.

Corralitos Creek at Maple Avenue - Minor flooding was observed on properties adjacent to Corralitos Creek.

Lions Creek at Wren Avenue and Ronan Avenue - About 4 acres in this area were flooded. The deepest flooding was at this intersection.

Flint Creek at Pleasant Hills Golf Course - Minor sheet flooding occurred in this area.

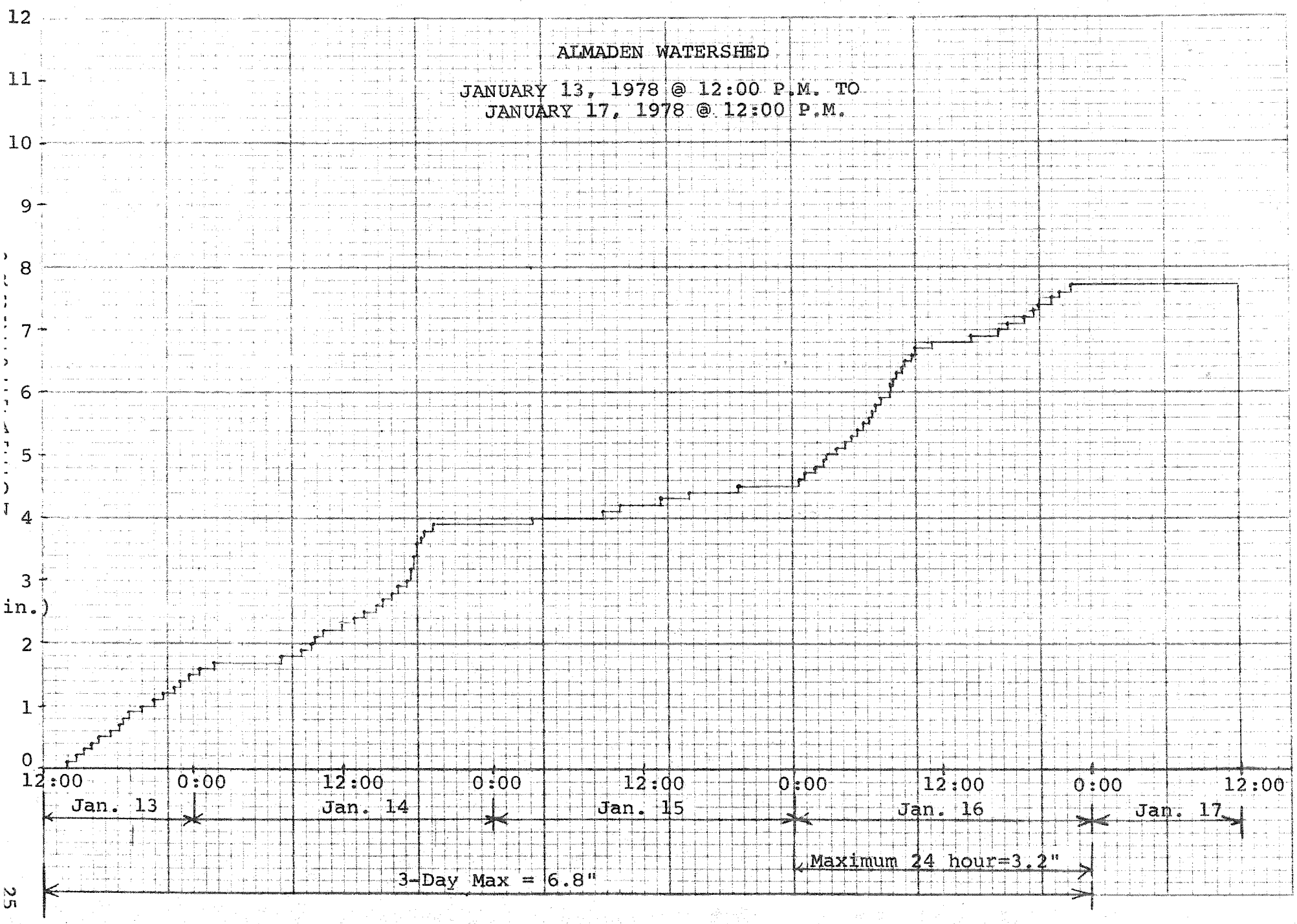
ACKNOWLEDGEMENT

Recognition is extended to the 87 District personnel who expended their time and effort performing essential functions during the "Emergency Operation". Each person contributed significantly to the total District emergency effort.

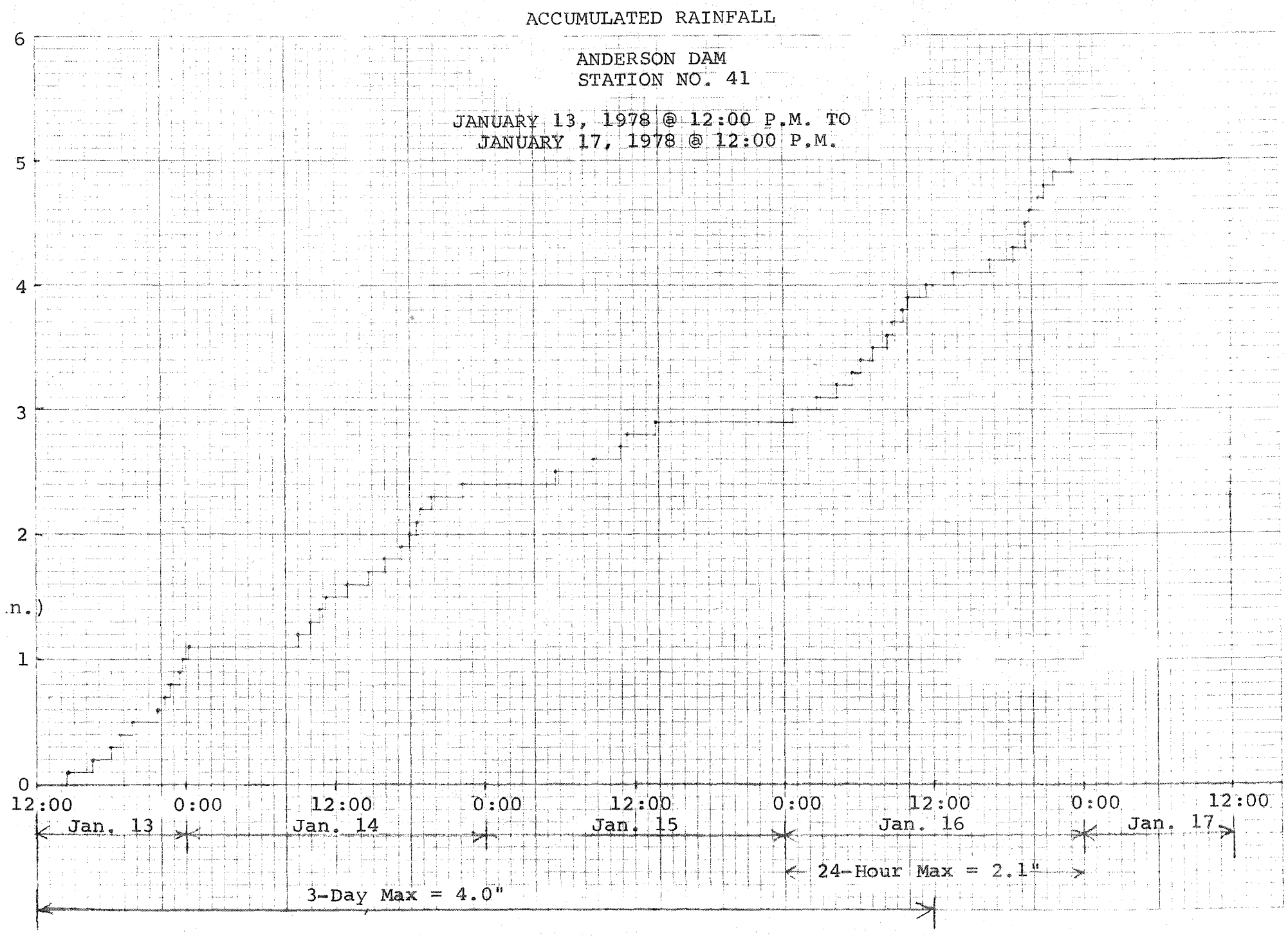
APPENDICES

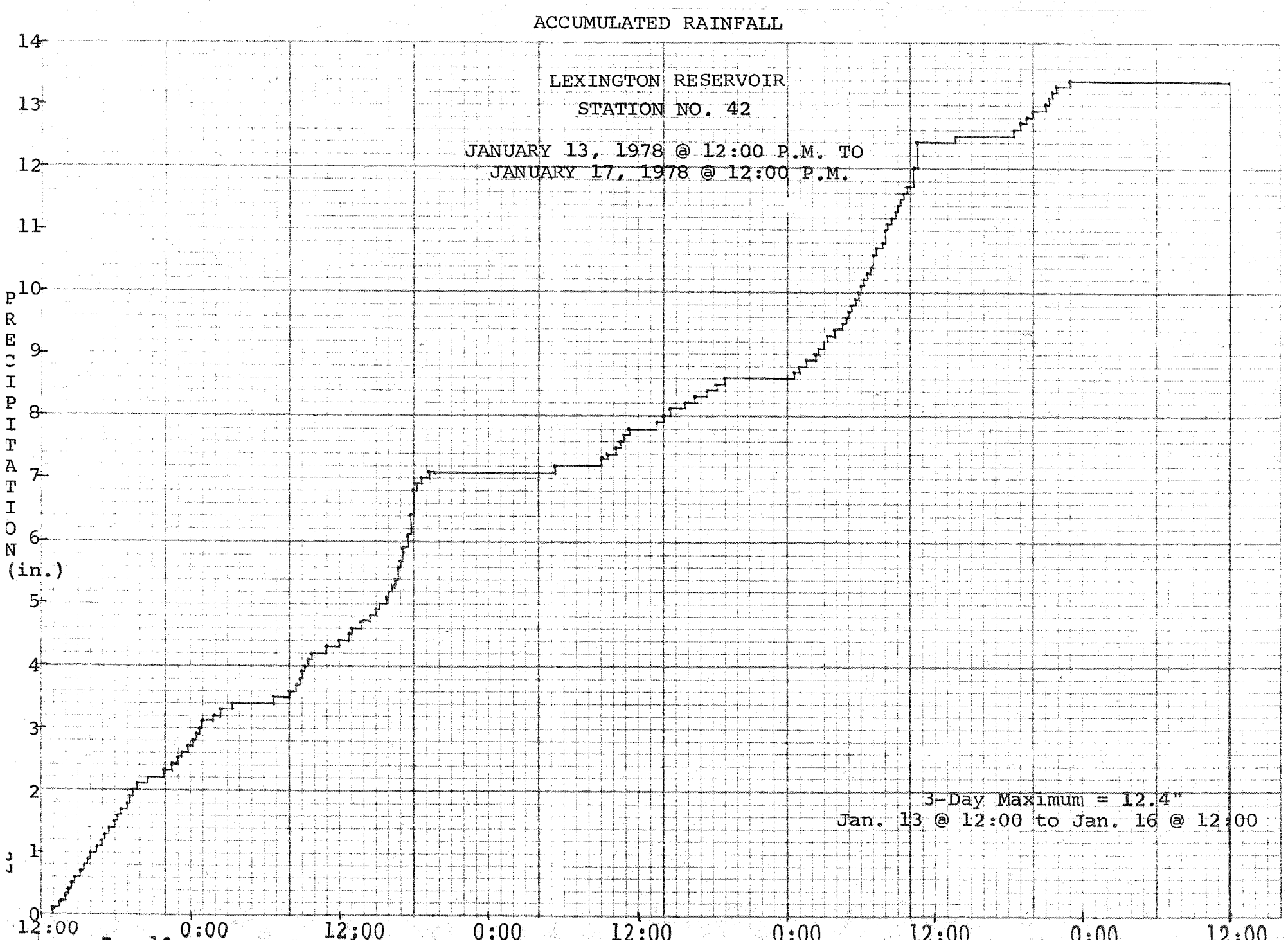
TELEDYNE POST
20MA-100 10X10 PER INCH
LITHO IN U.S.A.

ACCUMULATED RAINFALL



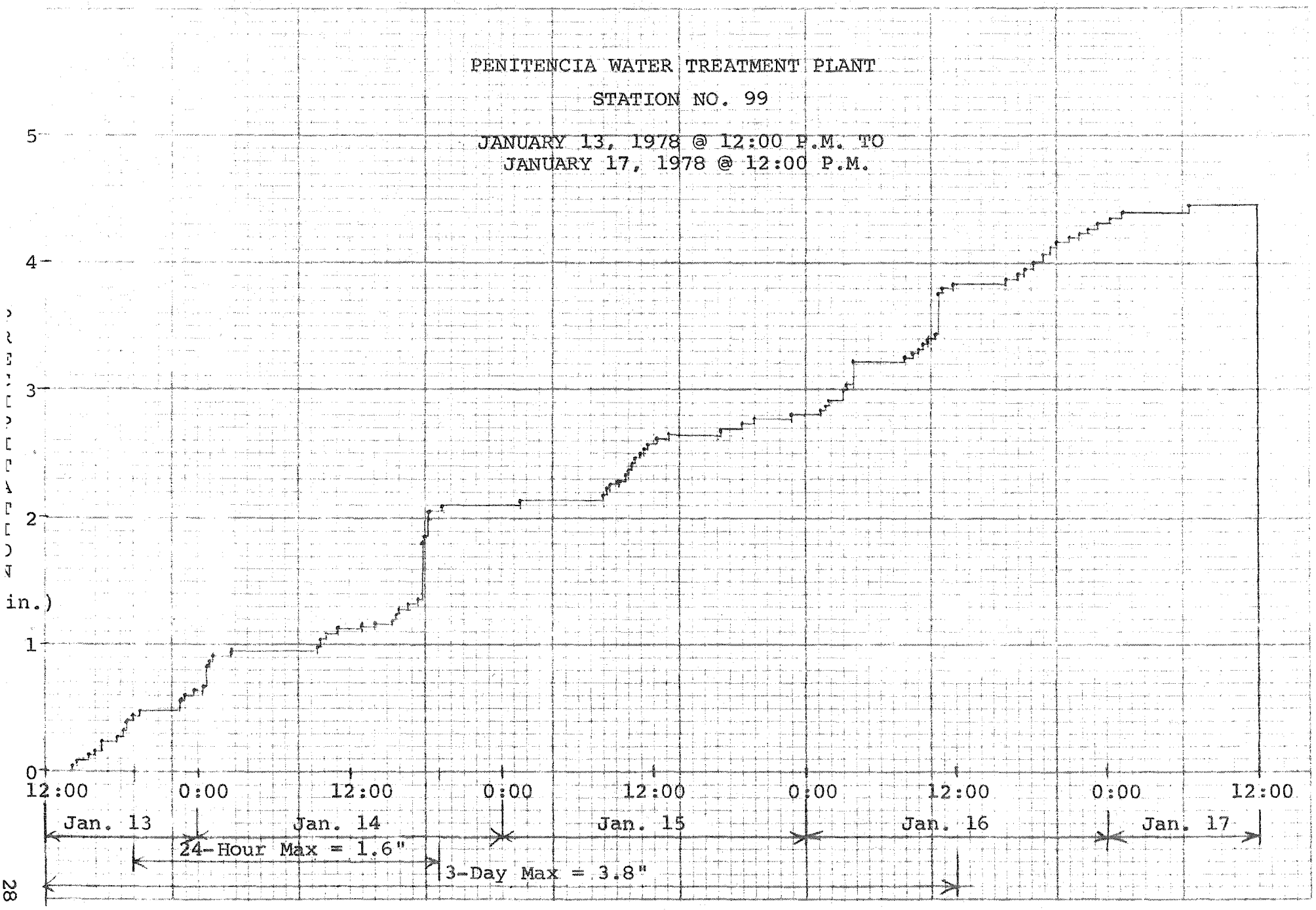
K+E 10 X 10 TO THE INCH • 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A. 46 0703




TELEDYNE POST
ACCUMULATED RAINFALL
LEXINGTON RESERVOIR
STATION NO. 42
JANUARY 13, 1978 @ 12:00 P.M. TO
JANUARY 17, 1978 @ 12:00 P.M.
PRECIPITATION (in.)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
12:00
0:00
12:00
0:00
12:00
0:00
12:00
0:00
12:00
3-Day Maximum = 12.4"
Jan. 13 @ 12:00 to Jan. 16 @ 12:00

TELEDYNE POST
LITHO IN U.S.A.

ACCUMULATED RAINFALL



APPENDIX A-4

TELEDYNE POST
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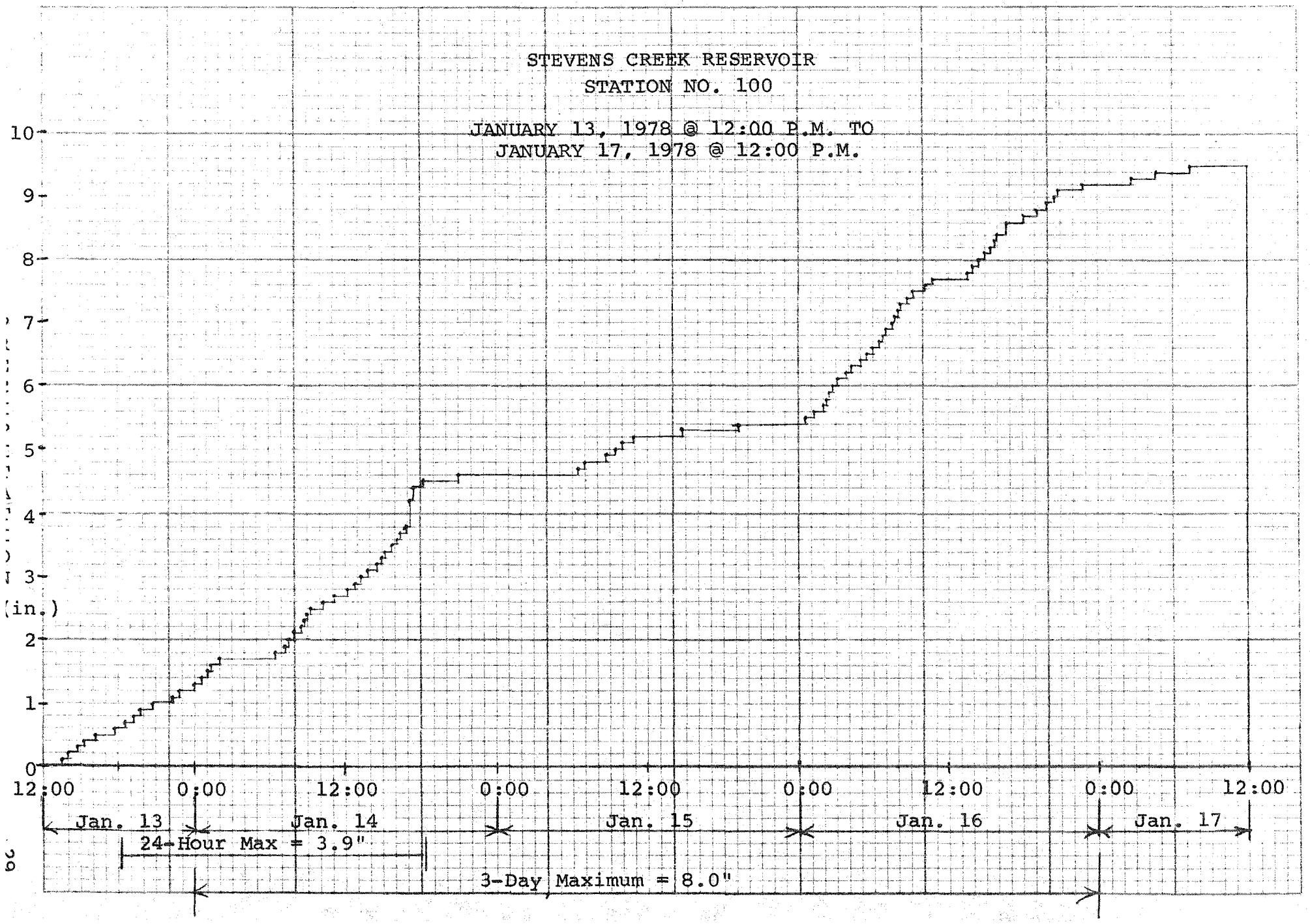
LITHO IN U.S.A.

ACCUMULATED RAINFALL



APPENDIX B-1

SUMMARY OF OBSERVED
WATER SURFACE DEPTH READINGS
ON 1/16/78

No.	Description & Location	Time	Observed Staff Reading (ft)	High Water Mark (ft)
FE-1	Coyote Creek @ Milpitas - Alviso Road	13:55	5.2	9.4
FE-5	Berryessa Creek @ Morrill Road	14:10	2.2	2.4
FE-10	San Tomas Creek @ Mountain View - Alviso Road	11:57	11.8	12.2
FE-10	San Tomas Creek @ Mountain View - Alviso Road	13:40	9.5	
FE-11	San Tomas Creek @ Kifer Road	11:38	9.5	10.4
FE-12	Sunnyvale East @ Caribbean Drive	UK	5.5	7.5
FE-21	Matadero Creek @ Foothill Exp.	11:10	3.9	4.5
FE-22	San Francisquito Creek @ Newell Road	12:10	9.8	UK
FE-22	San Francisquito Creek @ Newell Road	16:20	8.6	
STA-10	Fisher Creek @ Monterey Road	11:57	11.8	12.2
STA-10	Fisher Creek @ Monterey Road	15:30	3:55	
STA-27	Smith Creek @ Elam Avenue	UK	2.98	UK
STA-31	Calabazas Creek @ Rainbow Drive	14:30	2.2	7.09
STA-33	Hale Creek near Magdalena	10:12	4.9	UK
STA-35	Stevens Creek @ SPRR	10:55	4.80	UK
STA-43	Guadalupe Creek @ Los Gatos Golf Course	11:20	4.22	UK
STA-64	Berryessa Creek above Calaveras Road	9:50	3.90 (3.72-ADR)	5.23
STA-65	Little Arthur Creek @ Sanders Road	16:00	3.78	5.37

UK = unknown

APPENDIX B-1 (continued)

SUMMARY OF OBSERVED
WATER SURFACE DEPTH READINGS
ON 1/16/78
(cont)

No.	Description & Location	Time	Observed Staff Reading (ft)	High Water Mark (ft)
	Adobe Creek @ El Camino Real	11:05	1.60	UK
	Alviso Tide Gage #2 - Gold Street Bridge	11:55	9.0	UK
	Alviso Tide Gage #2 - Gold Street Bridge	13:40	9.0	
	Guadalupe River - USGS @ St. Johns	10:12	7.2	UK
	Matadero Creek @ Waverly	13:20	3.2	7.2
	Matadero Creek @ McGregor	UK	2.7 (below soffit)	UK

UK = unknown

APPENDIX B-2

STREAMFLOW MEASUREMENT RESULTS
(From Streamflow Gagings)

LOCATION	STATION NO.	DATE	TIME	CFS	GAGE HEIGHT
Penitencia Cr. @ Piedmont Rd.	1	1/14/78	0820	22.12	2.09
		1/15/78	0820	90.66	2.90
		1/16/78	0825	97.12	2.96
Fisher Cr. @ Monterey Rd.	10	1/14/78	1303	32.83	2.28
		1/16/78	1500	201.94	3.53
		1/17/78	1035	153.79	3.30
Coyote River below Coyote Dam	12	1/17/78	1135	269.91	6.02
		1/19/78	1245	247.54	6.04
Alamitos Cr. below Almaden Dam	16	1/16/78	1700	67.60	3.21
		1/17/78	1315	133.76	3.54
Golf Cr. near Camden Ave.	18	1/14/78	1130	34.41	1.20
		1/14/78	1200	?	?
		1/17/78	1100	13.87	0.91
Guadalupe Cr. @ Alamitos Recharge Fac.	20	1/18/78	1215	453.70	3.51
		1/16/78	1250	1767.42	4.23
		1/17/78	0830	615.99	3.63
Ross Cr. @ Blossom Hill Road	21	1/14/78	1200	68.88	2.55
		1/16/78	1425	87.57	2.80
Guadalupe Cr. near Hillsdale Ave.	23B	1/15/78	0800	442.44	3.55
		1/16/78	1540	1168.03	5.01
		1/17/78	1115	595.56	3.83
San Tomas Cr. above Williams Rd.	24	1/14/78	0845	651.90	3.67
		1/15/78	0840	208.89	2.61
		1/16/78	0820	2227.11	Fluc. between 4.96 & 5.34
Saratoga Cr. @ Pruneridge Ave.	25	1/15/78	1145	278.55	2.39
		1/16/78	1201	892.14	4.20

APPENDIX B-2 (continued)

LOCATION	STATION NO.	DATE	TIME	CFS	GAGE HEIGHT
Calabazas Cr., South of Monroe	26A	1/14/78	1030	549.32	4.51
		1/15/78	1000	148.67	2.73
		1/16/78	1345	372.36	5.76
Smith Cr. below Elam Ave.	27	1/14/78	1550	112.47	3.17
		1/15/78	1615	22.15	1.97
		1/16/78	1540	91.54	4.10
San Tomas Cr. @ SPRR near Quito Rd.	29	1/14/78	1505	178.86	4.05
		1/15/78	1510	77.01	3.48
		1/17/78	0924	62.80	3.47
Wildcat Cr. @ SPRR near Quito Rd.	30	1/14/78	1345	231.69	2.00
		1/15/78	1350	61.42	1.49
		1/17/78	1019	31.81	1.20
Permanente Cr. @ Berry Ave.	32A	1/15/78	1115	118.20	2.72
		1/16/78	1245	226.58	3.11
Hale Cr. near Magdalena Rd.	33	1/15/78	1240	32.54	2.48
		1/16/78	0930	133.12	4.20
Stevens Cr. @ SPRR - Mt. View	35	1/14/78	1404	208.48	2.98
		1/16/78	1203	539.22	4.00
		1/17/78	1228	371.96	3.50
Guadalupe Cr. @ Los Gatos Golf Course	43	1/14/78	0830	58.19	2.72
		1/15/78	1231	104.48	3.01
		1/16/78	0820	551.91	4.05
		1/17/78	0950	129.05	3.16
Stevens Cr. below Stevens Cr. Dam	44	1/16/78	1415	375.44	4.10
		1/17/78	1450	283.64	4.03

APPENDIX B-2 (continued)

LOCATION	STATION NO.	DATE	TIME	CFS	GAGE HEIGHT
Los Gatos Cr. @ Lincoln Ave.	50	1/14/78	1630	429.81	7.21
		1/15/78	1530	172.36	6.55
		1/16/78	1530	462.51	7.17
		1/17/78	1400	86.37	6.12
Ross Cr. @ Cherry Ave.	51	1/14/78	1445	298.78	5.49
		1/16/78	0900	474.89	6.54
Los Animas Cr. @ O'Connell Ranch	56	1/14/78	1410	103.14	2.84
		1/17/78	1304	238.42	3.09
Packwood Cr. @ Jackson Ranch	57	1/15/78	1417	50.79	2.76
		1/17/78	1530	35.57	2.56
Los Gatos Cr. @ Lark Ave.	59	1/15/78	1400	176.11	2.66
		1/17/78	1530	113.39	2.22
Berryessa Cr. above Calaveras Rd.	64	1/16/78	1000	177.65	4.15 Avg.
Little Arthur Cr. @ Sanders Rd.	65	1/14/78	1615	165.22	2.74
		1/15/78	1548	146.44	2.67
		1/16/78	1415	374.02	3.68
Alamitos Cr. near Greystone Lane	70	1/15/78	0922	101.08	2.52
		1/15/78	1001	106.13	2.56
		1/17/78	1500	217.17	3.01
		1/20/78	1055	42.13	2.16
Canoas Cr. @ Almaden Expressway	73	1/14/78	0920	38.34	2.66
		1/15/78	1045	52.73	3.01
		1/17/78	0825	39.57	2.98
Sunnyvale East @ Bayshore Freeway	74	1/14/78	1000	133.15	3.55
		1/15/78	0945	43.05	2.34
		1/17/78	0855	14.67	1.75
		1/17/78	0910	12.72	1.68

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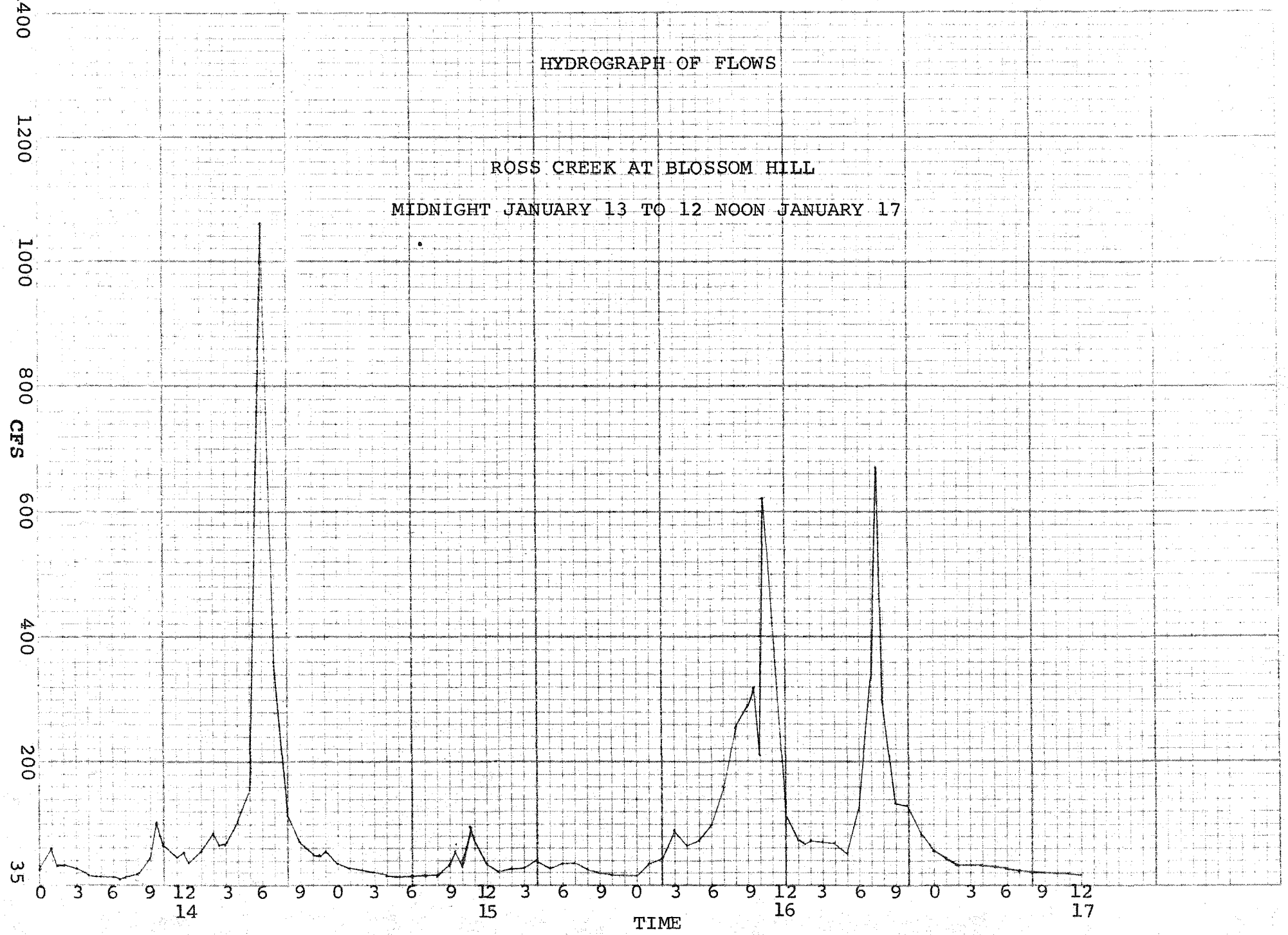
STATION 21

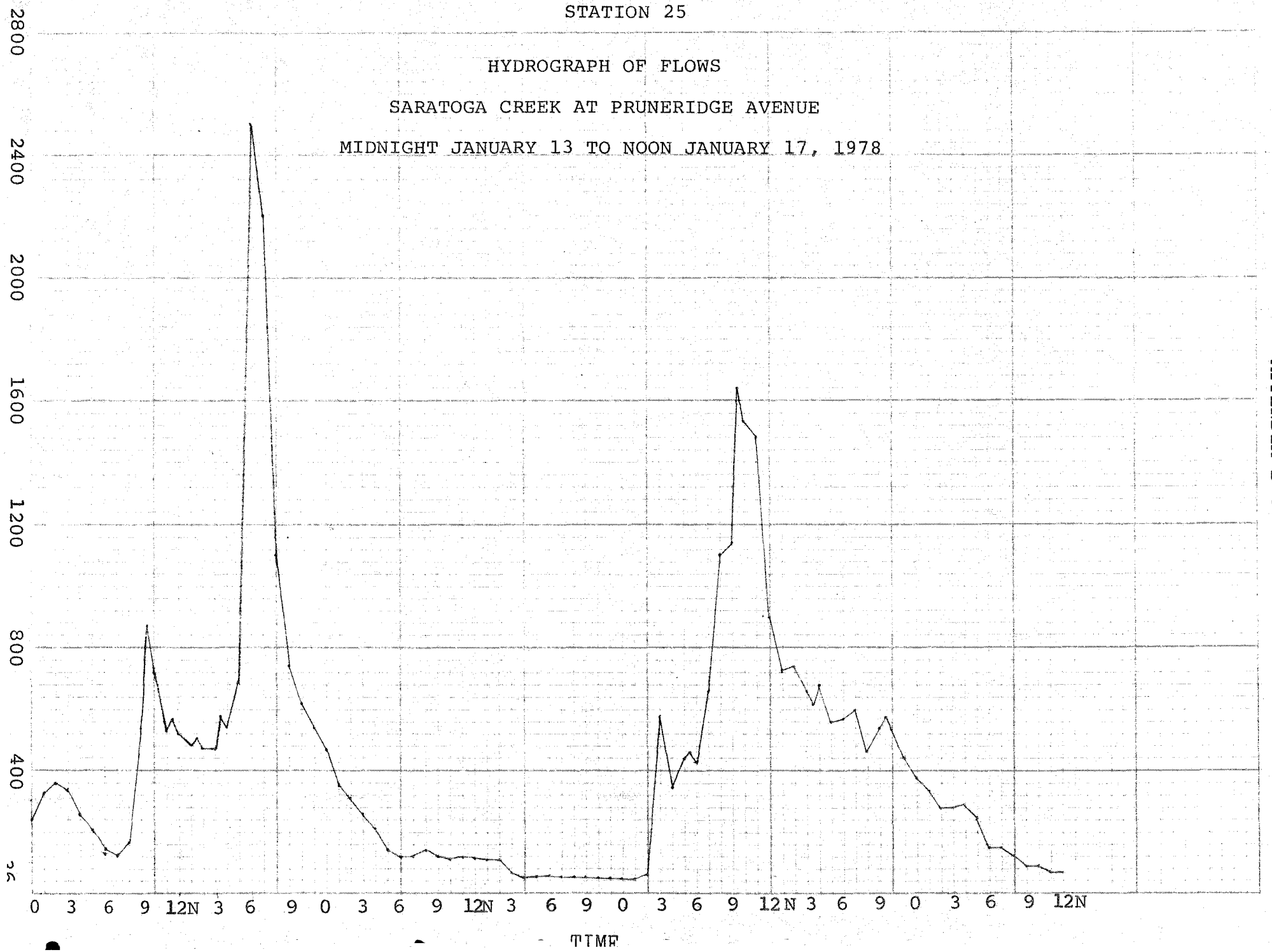


STATION 25

HYDROGRAPH OF FLOWS

SARATOGA CREEK AT PRUNERIDGE AVENUE

MIDNIGHT JANUARY 13 TO NOON JANUARY 17, 1978



TELEDYNE POST
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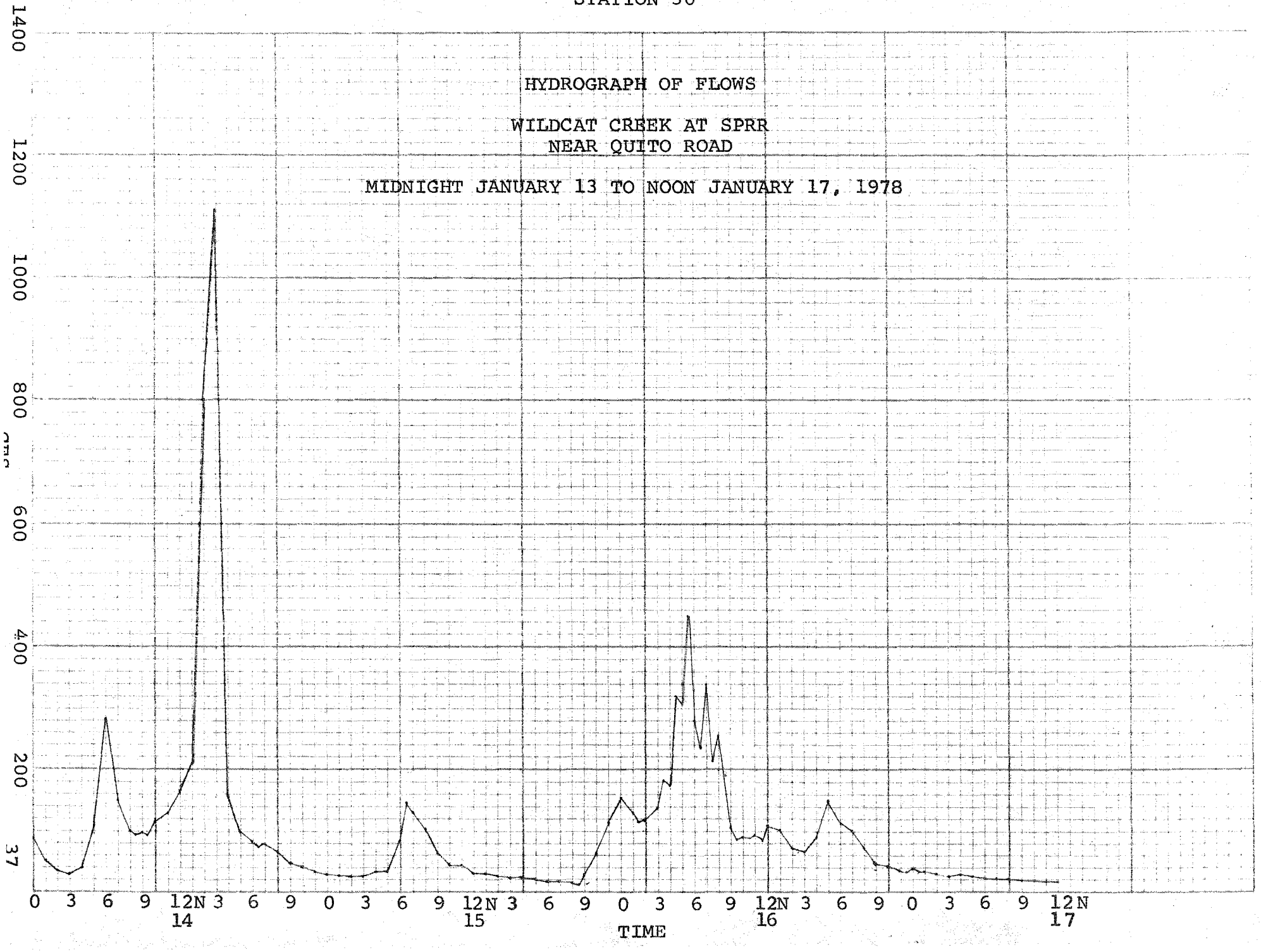
LITHO IN U.S.A.

STATION 30

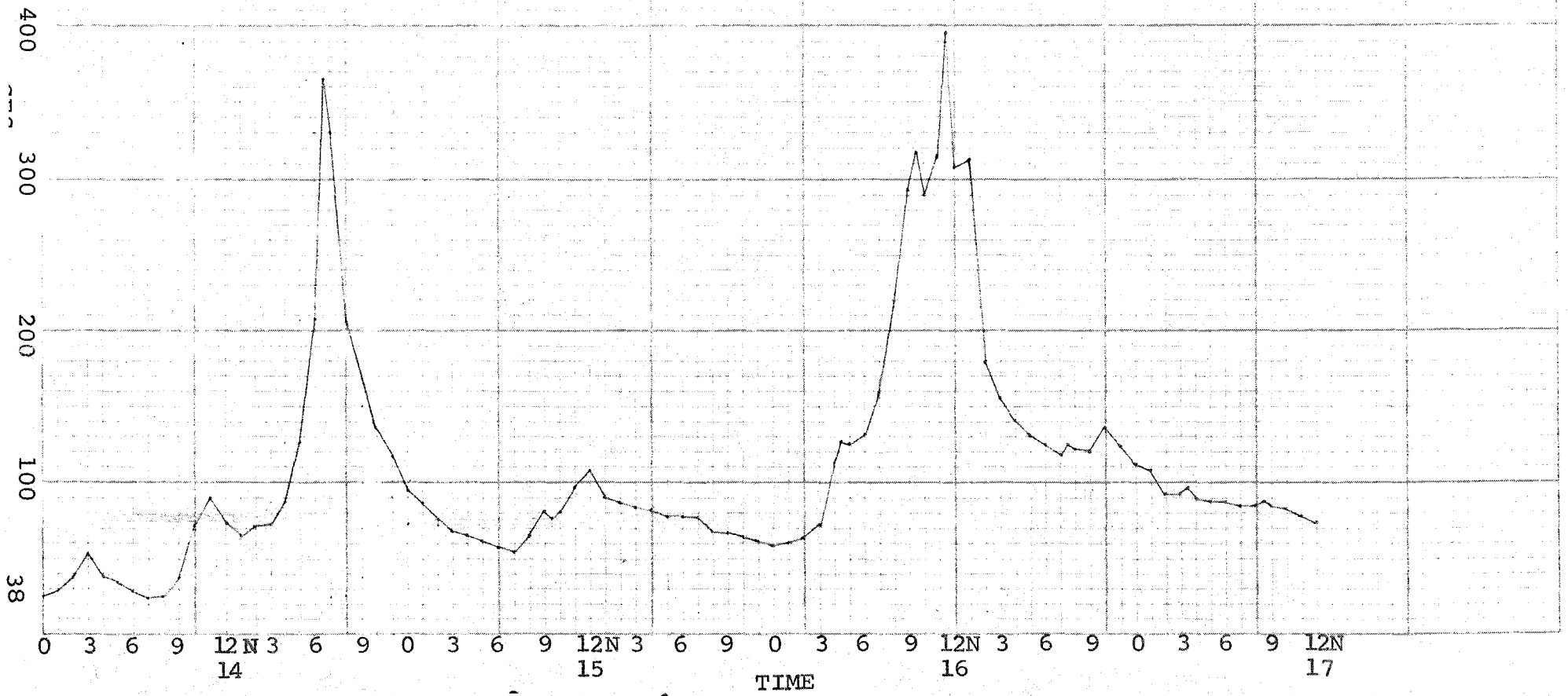


STATION 32A

HYDROGRAPH OF FLOWS

PERMANENTE CREEK AT BERRY AVENUE

MIDNIGHT JANUARY 13 TO NOON JANUARY 17, 1978



APPENDIX B-6

APPENDIX C-1

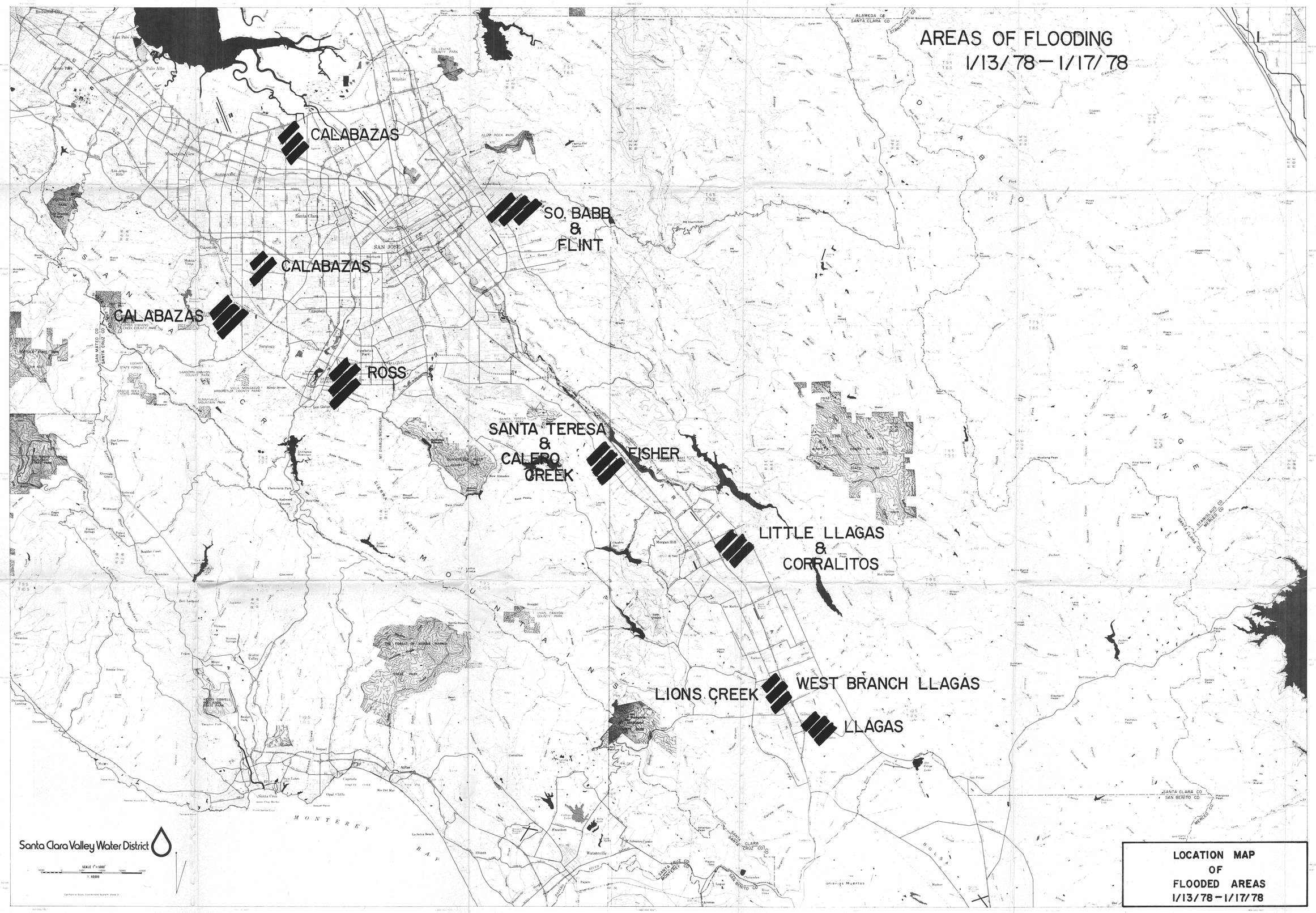
Preliminary Labor Charges
Flood Emergency Operation
1/13/78 - 1/17/78

Employees		87		
Straight Time		1038 Hours	=	$ 8,878.71
Overtime	(1½)	1189 "	=	14,861.83
Double Time	(2)	256 "	=	4,582.74
Double & Half	(2½)	5 "	=	136.18
Call Unit				
		2575 Hours		$28,469.46

APPENDIX D-1

Additional Information

Additional information is available that was not included in this report. This includes hydrologic data, photographs, flood information, team reports, etc. Should this information need to be referenced, contact Mr. Ron Johnson at the District offices.


AREAS OF FLOODING
1/13/78 – 1/17/78
CALABAZAS
CALABAZAS
CALABAZAS
SO. BABB & FLINT
ROSS
SANTA TERESA & CALERO CREEK
FISHER
LITTLE LLAGAS & CORRALITOS
LIONS CREEK
WEST BRANCH LLAGAS
LLAGAS
Santa Clara Valley Water District
LOCATION MAP OF FLOODED AREAS 1/13/78 – 1/17/78